



Poster code : ANA-PATH-7

In vitro culture of seal muscle-derived satellite cells

Freichels Astrid(1), Etienne Baise(2), Thierry Jauniaux(3), Nadine Antoine(4), Bernard Mignon(5)

(1) Université de Liège, Boulevard de Colonster 20, Liège, 4000, Belgium.

(2) University of Liege, Faculty of Veterinary Medicine, Department for Infectious and Parasitic Diseases .

(3) University of Liege, Faculty of Veterinary Medicine, Department of Morphology and Pathology .

(4) University of Liege, Faculty of Veterinary Medicine, Department of Morphology and Pathology .

(5) University of Liege, Faculty of Veterinary Medicine, Department for Infectious and Parasitic Diseases.

Over the last decade, adult stem cell populations from various tissues have been identified in humans and animals. In particular, muscle-derived satellite cells (MDSCs) have received a great attention due to their involvement in the repair process after injury. The self-renewing of the MDSCs maintains the stem population and provides myogenic cells, which are able to proliferate, to differentiate and to fuse to form myotubes. The aim of this study was to determinate if it was possible to isolate and cultivate MDSCs from a marine mammal, precisely a seal. A sample of dorsal muscle from a female juvenile seal (*Phoca vitulina*) was collected 2 days after death and preserved for 2 days at 4°C in Dulbecco's Modified Eagle's Medium supplemented with 10 % fetal bovine serum. Based on the methodology applied for the bovine MDSCs we were able to isolate and culture the seal MDSCs. Immunofluorescence staining showed that satellite cells expressed the paired box transcription factor Pax7, a specific marker of muscle precursor cells. To the best of our knowledge it is the first time that MDSCs from *Phoca vitulina* were isolated and cultivated. The opportunity to grow primary muscle cells from marine mammals opens new avenues for the study of metabolic adaptations to restricted oxygen supply during long and deep dives. Comparative approaches of the physiological and biochemical responses of marine and terrestrial animal primary muscle cells grown under different experimental conditions will be the next step to better understand the molecular physiology of dive.